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EXAMINER	
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ART UNIT	PAPER NUMBER
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/805,925	LANDERS ET AL.	
	Examiner	Art Unit	
	Ayal I. Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/19/04, 8/16/04, 2/22/05, 6/12/06.

DETAILED ACTION

Introduction

1. Claims 1-46 of U.S. Application 10/805,925 filed on 3/22/2004 are currently pending.

Claim Objections

2. Independent claims 1, 45, and 46 are objected to because of the following informalities: the preamble to the claim recites "a method for converting", yet the body of the claim makes no reference to converting or conversion. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 1-46 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

5. **Claims 1-20 and 45 lack a concrete, useful, and tangible result.**

6. The fundamental test for patent eligibility is to determine whether the claimed invention produces a "**useful, concrete and tangible result.**" See State Street Bank & Trust Co. v. Signature Financial Group Inc., 149 F. 3d 1368, 47 USPQ2d

1596 (Fed. Cir. 1998) and AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 50 USPQ2d 1447 (Fed. Cir. 1999). In these decisions, the court found that the claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result."

7. See State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. ("[T]he transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete and tangible result' – a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades").
8. See also AT&T, 172 F.3d at 1358, 50 USPQ2d at 1452 (Claims drawn to a long-distance telephone billing process containing mathematical algorithms were held patentable subject matter because the process used the algorithm to produce a useful, concrete, tangible result - a primary inter-exchange carrier ("PIC") indicator - without preempting other uses of the mathematical principle).
9. The Examiner respectfully submits that claims 1-20 do not recite a concrete, useful, tangible result. The method has no output, therefore there is no tangible result. Moreover, since there is no output, there is also no useful result.
10. **Claims 21-44 are directed to functional descriptive material -** data structures ***per se.***

11. Claims 21-44 are directed to data structures *per se*, are therefore are not statutory. See "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility", Annex IV; and MPEP § 2106 (II)(A). Both functional and non-functional "descriptive material" are nonstatutory when claimed as descriptive material per se. See In re Warmerdam, 33 F.3d 1354, 1360 (Fed. Cir. 1994).

12. **Claim 46 is a signal claim.**

13. "[I]t does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in § 101." See "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility", Annex IV, p.57.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. The prior art used for these rejections is as follows:

a. Mok, Swee M. et al. "Automatic Generation of Assembly Instructions using STEP." Proc. of the 2001 IEEE Int'l Conf. on Robotics & Automation. Seoul, Korea. May 21-26, 2001. (Hereinafter "**Mok**". The reference was

cited as an "X" reference in the EPO search report submitted by the applicant on 6/12/2006).

16. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

17. Claims 1-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Mok.

18. In regards to Claim 1, Mok teaches the following limitations:

Claim 1. A method for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model, comprising:

identifying and establishing a base feature;

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

establishing a parent coordinate system;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

identifying a parent modeling element;

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

identifying each dependency for each feature from said parent modeling element;

(See Mok, especially: Fig.1, and Section 2.2, "Feature Table")

restructuring each dependency for each said feature for placement, such that each feature exhibits a direct associative relationship with a reference feature; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

restructuring each dependency for each said feature for positioning, such that each feature exhibits a direct associative relationship with another reference feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

19. In regards to Claim 2, Mok teaches the following limitations:

Claim 2. The method of Claim 1 wherein said reference feature includes:

said parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a child coordinate system exhibiting an associative relationship with said parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a first datum exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a second datum exhibiting an associative relationship with said first datum.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

20. In regards to Claim 3, Mok teaches the following limitations:

Claim 3. The method of Claim 1 wherein said another reference feature includes:

said parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

said child coordinate system exhibiting an associative relationship with said parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a third datum exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a fourth datum exhibiting an associative relationship with said third datum.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

21. In regards to Claim 4, Mok teaches the following limitations:

Claim 4. The method of Claim 1 further including identifying a primitive element in said vertically structured CAD/CAM model.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

22. In regards to Claim 5, Mok teaches the following limitations:

Claim 5. The method of Claim 4 further including converting said primitive element to a feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

23. In regards to Claim 6, Mok teaches the following limitations:

Claim 6. The method of Claim 5 wherein said converting includes establishing a new feature corresponding to said primitive element such that said new feature exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for placement and positioning; and such that said new feature; exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for positioning.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

24. In regards to Claim 7, Mok teaches the following limitations:

Claim 7. The method of Claim 6 wherein said associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

25. In regards to Claim 8, Mok teaches the following limitations:

Claim 8. The method of Claim 1 wherein said base feature corresponds to a selected primitive element in said vertically structured CAD/CAM model.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

26. In regards to Claim 9, Mok teaches the following limitations:

> *Claim 9. The method of Claim 1 wherein said establishing said parent coordinate system comprises:*
>
> *creating a first datum plane positioned and oriented relative to a reference;*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

> *creating a second datum plane positioned and oriented relative to said reference; and*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

> *creating a third datum plane positioned and oriented relative to said reference.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

27. In regards to Claim 10, Mok teaches the following limitations:

> *Claim 10. The method of Claim 6 wherein said first datum plane, said second datum plane, and said third datum plane are orthogonal.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

28. In regards to Claim 11, Mok teaches the following limitations:

> *Claim 11. The method of Claim 1 wherein said feature dependent from said parent modeling element exhibits a parent child relationship with at least one of said parent modeling element and a descendent thereof such that positioning and placement of said dependent features is relative to said at least one of said parent modeling element and said descendent thereof.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

29. In regards to Claim 12, Mok teaches the following limitations:

> *Claim 12. The method of Claim 11 wherein at least one of said associative relationship and said another associative relationship is a parent/child relationship.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

30. In regards to Claim 13, Mok teaches the following limitations:

Claim 13. The method of Claim 1 wherein said restructuring each dependency for each said feature for placement further includes:

determining if said feature is dependent on an existing datum for placement;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

if said feature is dependent on an existing datum for placement, then at least one of:

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

configuring a new reference feature for placement of said feature wherein said reference feature is a descendent of said parent coordinate system and establishing an associative relationship between said feature and said new reference feature, then deleting said dependency,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

reconfiguring said existing datum as a descendant of said parent coordinate system; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

establishing an associative relationship with at least one of said parent coordinate system and a descendent reference feature therefrom and deleting said dependency.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

31. In regards to Claim 14, Mok teaches the following limitations:

Claim 14. The method of Claim 13 wherein said associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

32. In regards to Claim 15, Mok teaches the following limitations:

Claim 15. The method of Claim 1 wherein said restructuring each dependency for each said feature for positioning further includes:

determining if said feature is dependent on at least one existing datum for positioning;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

if said feature is dependent on said at least one existing datum for positioning, then at least one of:

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

configuring a new reference feature for positioning of said feature wherein said reference feature is a descendent of said parent coordinate system and establishing an associative relationship between said feature and said new reference feature, then deleting said dependency,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

reconfiguring said at least one existing datum as a descendant of said parent coordinate system;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

establishing an associative relationship with at least one of said parent coordinate system and a descendent reference feature therefrom and deleting said dependency.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

33. In regards to Claim 16, Mok teaches the following limitations:

Claim 16. The method of Claim 15 wherein said associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

34. In regards to Claim 17, Mok teaches the following limitations:

Claim 17. The method of Claim 1 wherein none of said features exhibits an associative relationship with any other feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

35. In regards to Claim 18, Mok teaches the following limitations:

Claim 18. The method of Claim 1 wherein none of said features exhibits an associative relationship with said base feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

36. In regards to Claim 19, Mok teaches the following limitations:

Claim 19. The method of Claim 1 wherein said base feature exhibits an associative relationship with at least one of said coordinate system and a descendent thereof.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

37. In regards to Claim 20, Mok teaches the following limitations:

Claim 20. The method of Claim 1 wherein a descendent of said coordinate system includes at least one of a reference, point, line, datum plane and another coordinate system positioned and oriented relative to said coordinate system.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

38. In regards to Claim 21, Mok teaches the following limitations:

Claim 21. A horizontally structured CAD/CAM model, comprising:

a reference feature;

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

a base feature;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a feature;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

wherein said model is converted from a vertically structured CAD/CAM model by restructuring each dependency for each said feature for placement, such that each feature exhibits a direct associative relationship with said reference feature, and restructuring each dependency for each said feature for positioning, such that each feature exhibits a direct associative relationship with another reference feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

39. In regards to Claim 22, Mok teaches the following limitations:

Claim 22. The system of Claim 21 wherein said reference feature includes:

a parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a child coordinate system exhibiting an associative relationship with said parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a first datum exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a second datum exhibiting an associative relationship with said first datum.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

40. In regards to Claim 23, Mok teaches the following limitations:

Claim 23. The system of Claim 21 wherein said another reference feature includes:

a parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a child coordinate system exhibiting an associative relationship with said parent coordinate system,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a third datum exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a fourth datum exhibiting an associative relationship with said third datum.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

41. In regards to Claim 24, Mok teaches the following limitations:

Claim 24. The model of Claim 21 wherein at least one of said associative relationship and said another associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

42. In regards to Claim 25, Mok teaches the following limitations:

Claim 25. The model of Claim 21 wherein said feature exhibits an associative relationship with said base feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

43. In regards to Claim 26, Mok teaches the following limitations:

Claim 26. The model of Claim 21 wherein said base feature exhibits an associative relationship with at least one of said reference feature and a descendant thereof.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

44. In regards to Claim 27, Mok teaches the following limitations:

Claim 27. The system of Claim 1 further including identifying a primitive element in said vertically structured CAD/CAM model.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

45. In regards to Claim 28, Mok teaches the following limitations:

> *Claim 28. The system of Claim 27 further including a new feature established by converting said primitive element to a feature corresponding to said primitive element such that said new feature exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for placement and positioning; and such that said new feature; exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for positioning.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

46. In regards to Claim 29, Mok teaches the following limitations:

> *Claim 29. The system of Claim 28 wherein said associative relationship is a parent/child relationship.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

47. In regards to Claim 30, Mok teaches the following limitations:

> *Claim 30. The system of Claim 21 wherein said base feature corresponds to a selected primitive element in said vertically structured CAD/CAM model.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

48. In regards to Claim 31, Mok teaches the following limitations:

> *Claim 31. The model of Claim 21 wherein said reference feature comprises a coordinate system.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

49. In regards to Claim 32, Mok teaches the following limitations:

> *Claim 32. The model of Claim 31 wherein said coordinate system comprises:*
>
> > *a first datum plane positioned and oriented relative to a reference;*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a second datum plane positioned and oriented relative to said reference; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a third datum plane positioned and oriented relative to said reference.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

50. In regards to Claim 33, Mok teaches the following limitations:

Claim 33. The model of Claim 32 wherein said first datum plane, said second datum plane, and said third datum plane are orthogonal.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

51. In regards to Claim 34, Mok teaches the following limitations:

Claim 34. The model of Claim 21 wherein said reference feature comprises at least one of said coordinate system, another coordinate system, a point, line curve, surface, and datum plane.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

52. In regards to Claim 35, Mok teaches the following limitations:

Claim 35. The system of Claim 21 wherein said restructuring each dependency for each said feature includes:

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a dependency established for each said feature for placement includes establishing an associative relationship with said reference feature to control placement of each said feature;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a dependency established dependency for each said feature for positioning includes establishing another associative relationship with said another reference feature to control positioning of each said feature; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

deletion of any existing associative relationships to said at least one of said parent modeling element and a child thereof.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

53. In regards to Claim 36, Mok teaches the following limitations:

Claim 36. The system of Claim 35 wherein at least one of said associative relationship and said another associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

54. In regards to Claim 37, Mok teaches the following limitations:

Claim 37. The system of Claim 21 wherein said restructuring each dependency for each said feature for placement further includes:

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

if said feature is dependent on an existing datum for placement; then at least one of:

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a new reference feature is configuring for placement of said feature wherein said reference feature is a descendent of a parent coordinate system and establishing an associative relationship between said feature and said new reference feature, then deleting said dependency,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

said existing datum is reconfigured as a descendant of said parent coordinate system; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

an associative relationship is established with at least one of said parent coordinate system and a descendent reference feature therefrom and deleting said dependency.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

55. In regards to Claim 38, Mok teaches the following limitations:

Claim 38. The system of Claim 37 wherein said associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

56. In regards to Claim 39, Mok teaches the following limitations:

Claim 39. The system of Claim 21 wherein said restructuring each dependency for each said feature for positioning further includes:

if said feature is dependent on said at least one existing datum for positioning, then at least one of:

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

a new reference feature is configured for positioning of said feature wherein said reference feature is a descendent of a parent coordinate system and establishing an associative relationship between said feature and said new reference feature, then deleting said dependency,

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

said at least one existing datum is reconfigured as a descendant of said parent coordinate system;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

an associative relationship is established with at least one of said parent coordinate system and a descendent reference feature therefrom and deleting said dependency.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

57. In regards to Claim 40, Mok teaches the following limitations:

Claim 40. The system of Claim 39 wherein said associative relationship is a parent/child relationship.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

58. In regards to Claim 41, Mok teaches the following limitations:

> *Claim 41. The system of Claim 21 wherein none of said features exhibits an associative relationship with any other feature.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

59. In regards to Claim 42, Mok teaches the following limitations:

> *Claim 42. The system of Claim 21 wherein none of said features exhibits an associative relationship with said base feature.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

60. In regards to Claim 43, Mok teaches the following limitations:

> *Claim 43. The system of Claim 21 wherein said base feature exhibits an associative relationship with at least one of said coordinate system and a descendent thereof.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

61. In regards to Claim 44, Mok teaches the following limitations:

> *Claim 44. The system of Claim 21 wherein a descendent of said coordinate system includes at least one of a reference, point, line, datum plane and another coordinate system positioned and oriented relative to said coordinate system.*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

62. In regards to Claim 45, Mok teaches the following limitations:

> *Claim 45. A storage medium encoded with a machine readable computer program code, wherein said storage medium includes instructions for causing a computer to implement a method for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model comprising:*
>
> *identifying and establishing a base feature;*

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

> *establishing a parent coordinate system;*

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

identifying a parent modeling element;

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

identifying each dependency for each feature from said parent modeling element;

(See Mok, especially: Fig.1, and Section 2.2, "Feature Table")

restructuring each dependency for each said feature for placement, such that each feature exhibits a direct associative relationship with a reference feature; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

restructuring each dependency for each said feature for positioning, such that each feature exhibits a direct associative relationship with another reference feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

63. In regards to Claim 46, Mok teaches the following limitations:

Claim 46. A computer data signal embodied in a computer readable medium:

wherein said computer data signal comprises code configured to cause a computer to implement a method for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model comprising:

identifying and establishing a base feature;

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

establishing a parent coordinate system;

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

identifying a parent modeling element;

(See Mok, especially: Section 2, "STEP to SACS – Automated Assembly")

identifying each dependency for each feature from said parent modeling element;

(See Mok, especially: Fig.1, and Section 2.2, "Feature Table")

restructuring each dependency for each said feature for placement, such that each feature exhibits a direct associative relationship with a reference feature; and

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

restructuring each dependency for each said feature for positioning, such that each feature exhibits a direct associative relationship with another reference feature.

(See Mok, especially: Section 3, "Simulation and Analysis", and Tables 1 & 2)

Conclusion

64. The following prior art, made of record and not relied upon, is considered pertinent to applicant's disclosure.

65. The following references conceptually teach much of the claimed invention, but do not expressly teach some limitations such as "parent coordinate system" and "child coordinate system":

66. Ganesan, R. and V. Devarajan. "FlexiCAD: An Architecture for Integrated Product Modeling and Manufacture by Features." 1994 IEEE. pp.60-65. (Cited by applicant in IDS submitted 6/12/2006.

67. Tang, M. et al. "Parametric Modeling with User-Defined Features." The 6th Int'l Conf. on Computer Supported Cooperative Work in Design. July 2001. pp.207-211. (See especially Sections 6, 7, and 8).

68. Agbodan, D. et al. "A Topological Entity Matching Technique for Geometric Parametric Models." Shape Modeling Int'l 2003. May 12-15, 2003. pp.235-244.

69. US PG-PUB 2004/0153824 to Devarajan et al. (See especially Fig.3a, Items 121-125 and associated text).

70. US PG-PUB 2004/0148145 to Chen et al. (See Figs.6, 7, and associated text).

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

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Art Unit 2123
October 26, 2006

10/27/06
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